

ABSTRACT

[Abstract]

[Problems] To provide a process that allows melt growth of single crystals of a gallium-containing nitride with less dangerous, inexpensive equipment, in particular, a process that can be performed under normal pressure.

[Solving Means] A process for producing single crystals of a gallium-containing nitride on a seed crystal substrate by a reaction between molten gallium retained in a container inside a crystal growth chamber and nitrogen gas, the process includes the steps of preparing a eutectic alloy melt of gallium (Ga); dipping the seed crystal substrate into the eutectic alloy melt, the seed crystal substrate having a catalytic metal having a mesh, stripe, or open polka-dot pattern deposited thereon; and graphoeptaxially growing a single crystal phase of the gallium-containing nitride on the surface of the seed crystal substrate by the reaction at the surface of the seed crystal substrate between gallium, which is a component of a eutectic alloy, and nitrogen dissolving into the eutectic alloy melt from a space zone containing a nitrogen supply source above a surface of the melt.